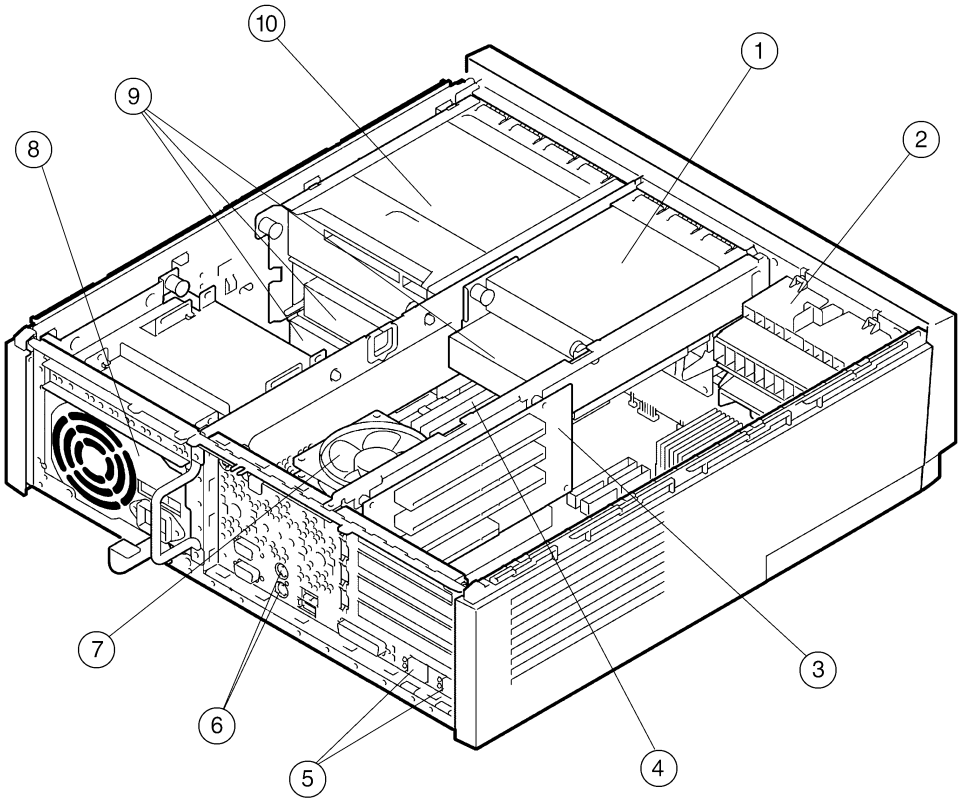
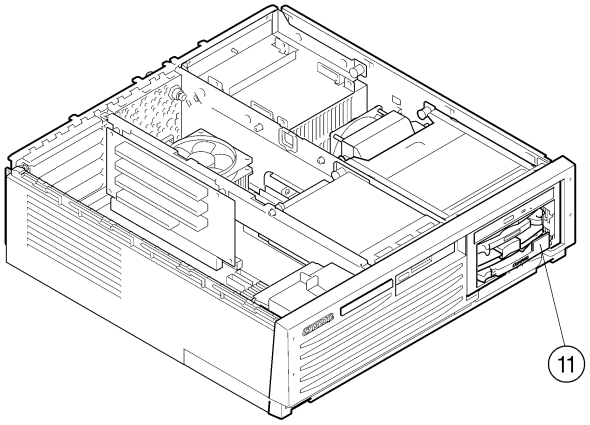
Overview

At A Glance

AlphaServer/AlphaStation DS10 3U Systems include:

- Alpha 600-MHz CPU with 2-MB onboard ECC cache
- 256-MB, 512-MB, or 1-GB SDRAM memory – expandable to 2-GB maximum memory capacity
- Onboard dual 10/100 BaseT Ethernet ports
- Four PCI expansion slots – three 64-bit PCI slots and one 32-bit PCI slot
- Onboard dual IDE controller
- 1.44-MB diskette drive
- 600-MB CD-ROM drive
- Two storage cage subsystems: Internal Storage Cage for IDE/SCSI tapes/drives; Front Access Storage Cage for SCSI drives
- DS10 Internal Storage Cage Systems can be configured with: three internal 3.5″ x 1″ hard disk drives **or** two internal 3.5″ x 1″ hard disk drives and one 5.25″ x 1.6″ removable media device
- DS10 Front Access Storage Cage Systems can be configured with: two front access 3.5” x 1” hard disk drives and two internal 3.5” x 1” hard disk drives)
- Maximum Internal storage capacity: Internal Storage Cage-108-GB SCSI or 90-GB IDE; Front Access Storage Cage-144-GB SCSI
- Two serial ports: COM1 port is both an RMC port with modem control and a full-duplex asynchronous communications port; COM2 port is a full-duplex asynchronous communications port
- Bi-directional enhanced parallel port
- PS/2-style keyboard port and mouse port
- 300W (120/240V, 60/50 Hz) power supply
- U.S. English documentation
- Tru64™ UNIX or OpenVMS Factory Installed Software
- 90-day software product warranty
- Protected by Compaq Services, including three-year, on-site hardware with next business day response
- Note: Keyboard, power cord, and mouse must be ordered separately





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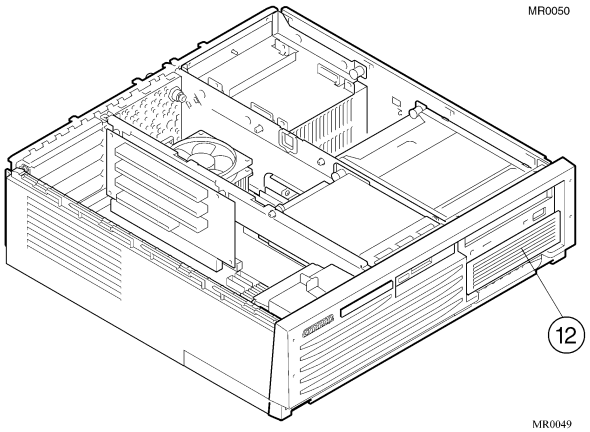

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1. Diskette drive
2. Fan
3. PCI riser card
4. Memory boards
5. Dual Ethernet ports
6. Keyboard and mouse ports
7. CPU and fan
8. Power supply
9. Disks
10. CD-ROM drive
11. Front Access Storage Cage
12. Internal Storage Cage

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Standard Features

Processor	Alpha 21264A 600-MHz processor	
Cache Memory	2-MB onboard cache	
Upgradability	Supports upgrades of memory and hard drives	
	Standard	One CPU
Memory	Standard	256 MB, 512 MB, or 1 GB (one memory kit) – Tru64 UNIX, OpenVMS; 512 MB or 1 GB – Linux-Ready
	Maximum	2 GB (two memory kits, kits include two industry-standard DIMMs with ECC support)
Network Controller	Onboard dual 10/100 BaseT Ethernet ports	
Expansion	Storage bays	Internal Storage Cage Systems: Five total – CD-ROM, FDD, and three storage bays: Three internal 3.5″ x 1″ hard disk drives **or** two internal 3.5″ x 1″ hard disk drives and one 5.25″ x 1.6″ removable media device
		Front Access Storage Cage Systems: Six Total – CD-ROM, FDD, and Four Storage bays (two front access 3.5" x 1" hard disk drives and two internal 3.5" x 1" hard disk drives)
	PCI slots	Four full-length slots (three 64-bit, one 32-bit)
Storage	Diskette Drive	1.44-MB diskette drive
	CD-ROM	Internal Storage Cage Systems: 5.25″ half height 40X CD-ROM drive
		Front Access Storage Cage Systems 24X slim-line CD-ROM drive
	Hard Drives	20-GB and 40-GB IDE disk drives or 9.1-GB, 18.2-GB, 36.4-GB Wide Ultra3 SCSI disk drives available with optional SCSI controller
Storage Controller	Onboard IDE controller for internal storage, choice of optional storage controllers	
Expansion Ports	Parallel	One bi-directional enhanced port
	Serial	Two ports, one serial port with full-duplex asynchronous modem control and one RMS dedicated serial port with full-duplex asynchronous modem control
	Keyboard	One PS/2-style port
	Mouse	One port
Power Supply	300W (88-260V, 47-63 Hz)	
Manageability	Compaq Insight Manager	
Supported Options	A detailed summary of options supported on the AlphaServer/AlphaStation DS10 is available at http://www.compaq.com/alphaserver/options/asds10/ds10_options.html	
OS Support	AlphaServer DS10 Tru64 UNIX systems include pre-installed software (V5.1), Base license, Unlimited User license, Server Extension license, Open Source Internet Solutions, and iPlanet Web Server – Enterprise Edition	
	AlphaStation DS10 Tru64 UNIX systems include pre-installed software (V5.1), 2-user Base license, and Compaq Open3D traditional license.	
	AlphaServer DS10 OpenVMS systems include pre-installed software (V7.2-1), Base license with System Manager license and Compaq Enterprise Integration Server License Package for OpenVMS V3.0A.	
	AlphaStation DS10 OpenVMS systems include pre-installed software (V7.2-1), Base license, Concurrent Use 1-user license, NAS 150 Client license, and Compaq Open3D traditional license.	
	Minimum OS support: Tru64 UNIX V4.0F or OpenVMS V7.1 –2	
Service and Support	Protected by Compaq Services, including a three-year, on-site hardware warranty with next business day response. Software warranty is a 90-day telephone advisory. Training, consulting, network integration, software support, comprehensive system maintenance and guaranteed uptime services are also available for customers requiring higher levels of service and support.	

Step 1 – Select system

AlphaServer/AlphaStation DS10 600-MHz systems require the **mandatory** selection of the following items:

- **One Storage Cage** (either Internal Storage Cage or Front Access Storage Cage) **and one system disk**
- **If Internal Storage Cage is selected**:
  - Mandatory selection of one IDE or one internal SCSI system disk drive
  - Mandatory selection of SCSI adapter and SCSI cable kit required for internal SCSI disks and tape
- **If Front Access Storage Cage is selected:**
  - Mandatory selection of one universal SCSI system disk drive
  - Mandatory selection of SCSI adapter is required for Front Access Storage Cage (cable is included)
  - Front Access Storage Cage based system is SCSI only. (IDE drives cannot be used.)
- Country-specific power cord
- Software media and documentation for first system on site
- Rackmount kit for rackmount systems (See Step 5 – M-series Cabinet Enclosures)
- Minimum OS support: Tru64 UNIX V4.0F or OpenVMS V7.1-2

Notes: Country-specific keyboard and mouse are recommended. See Step 11. For system integration of any options with 6-3 part numbers, contact *Custom*Systems

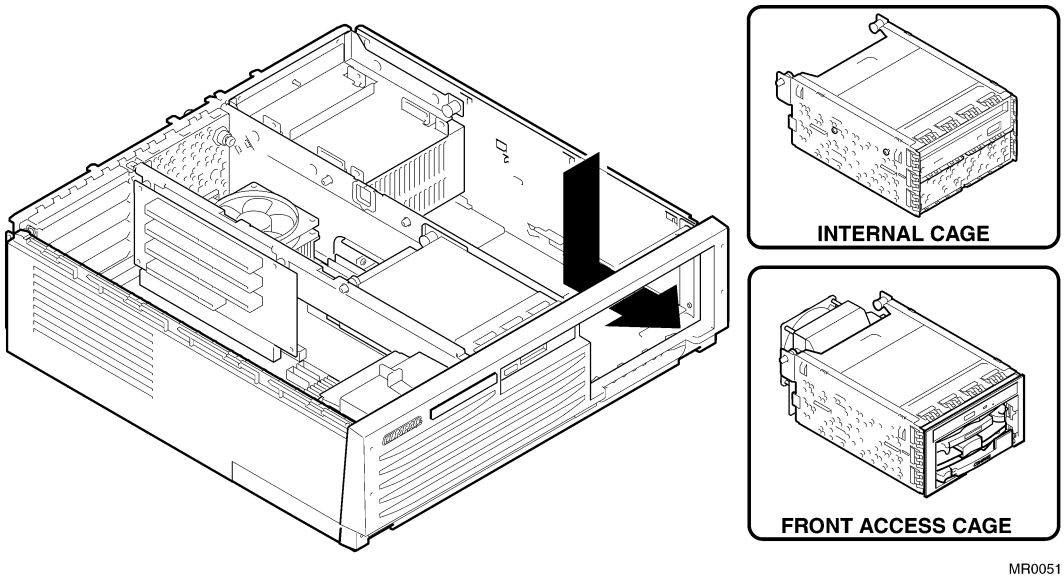
AlphaServer DS10 600-MHz Base Systems

OS	CPU	Memory	PCI	2-10/100t Ports	Hard Drive	Storage Cage	Order No.
Tru64 UNIX	600 MHz	256 MB	4	Onboard	Mandatory	Mandatory	DA-74BAA-DA
Tru64 UNIX	600 MHz	512 MB	4	Onboard	Mandatory	Mandatory	DA-74BAA-EA
Tru64 UNIX	600 MHz	1 GB	4	Onboard	Mandatory	Mandatory	DA-74BAA-FA
OpenVMS	600 MHz	256 MB	4	Onboard	Mandatory	Mandatory	DY-74BAA-DA
OpenVMS	600 MHz	512 MB	4	Onboard	Mandatory	Mandatory	DY-74BAA-EA
OpenVMS	600 MHz	1 GB	4	Onboard	Mandatory	Mandatory	DY-74BAA-FA
Linux-Ready	600 MHz	512 MB	4	Onboard	Mandatory	Mandatory	DJ-74BAA-EA
Linux-Ready	600 MHz	1 GB	4	Onboard	Mandatory	Mandatory	DJ-74BAA-FA

AlphaStation DS10 600-MHz Base Systems

OS	CPU	Memory	PCI	2-10/100t Ports	Hard Drive	Storage Cage	Order No.
Tru64 UNIX	600 MHz	256 MB	4	Onboard	Mandatory	Mandatory	DA-74BAA-DW
Tru64 UNIX	600 MHz	512 MB	4	Onboard	Mandatory	Mandatory	DA-74BAA-EW
Tru64 UNIX	600 MHz	1 GB	4	Onboard	Mandatory	Mandatory	DA-74BAA-FW
OpenVMS	600 MHz	256 MB	4	Onboard	Mandatory	Mandatory	DY-74BAA-DW
OpenVMS	600 MHz	512 MB	4	Onboard	Mandatory	Mandatory	DY-74BAA-EW
OpenVMS	600 MHz	1 GB	4	Onboard	Mandatory	Mandatory	DY-74BAA-FW
Linux-Ready	600 MHz	512 MB	4	Onboard	Mandatory	Mandatory	DJ-74BAA-EW
Linux-Ready	600 MHz	1 GB	4	Onboard	Mandatory	Mandatory	DJ-74BAA-FW

Step 2 – Select Mandatory Options (Storage Cage, System Disk, SCSI Controller, Power Cord)



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Step 2a – Mandatory Selection of Storage Cage

- DS10 Systems support **one** Storage Cage
- Selection of one Storage Cage is **mandatory (no exceptions)**
- DS10 Internal Storage Cage: DS10 System with Internal Cage supports three storage devices:
  - Either three internal hard disk drives or one 5.25″ HH backup tape and two internal hard disk drives

- DS10 Front Access Storage Cage: DS10 System with Front Access Cage supports four storage devices:
  - Two Compaq Universal disk drives plus two internal disk drives

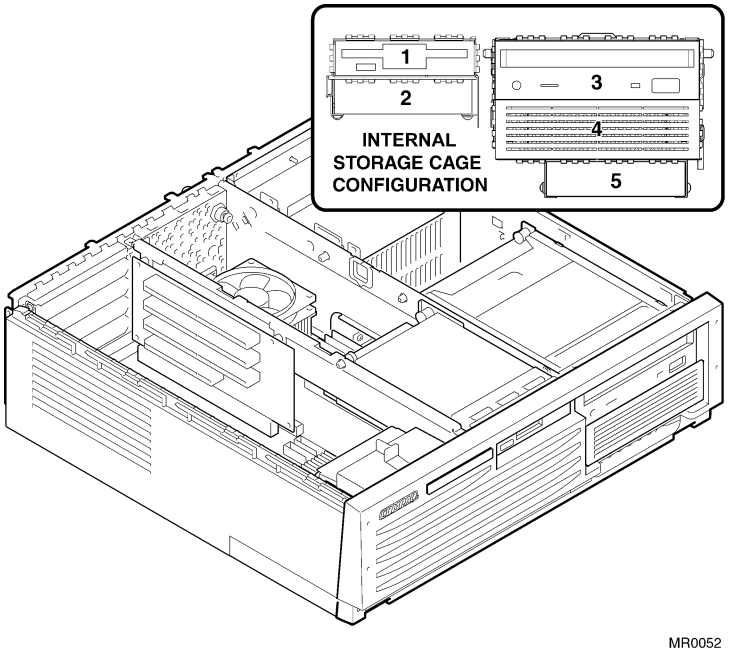
Note: The Front Access Storage Cage does not currently support tape drives.

Internal Storage Cage - System Disk Drive - Mandatory

- Selection of one system disk drive is mandatory for the Internal Storage Cage (3X-BA10A-AA)
  - mandatory selection of one IDE **or** one internal SCSI system disk drive
  - mandatory selection of SCSI adapter and SCSI cable kit required for internal SCSI disks and tape

Step 2 – Select Mandatory Options (Storage Cage, System Disk, SCSI Controller, Power Cord) *(continued)*

Step 2b – Mandatory Selection of System Disk



1. Floppy Disk Drive
2. Internal Drive Bay
3. CD ROM
4. Internal Drive/ Tape Bay
5. Internal Drive Bay

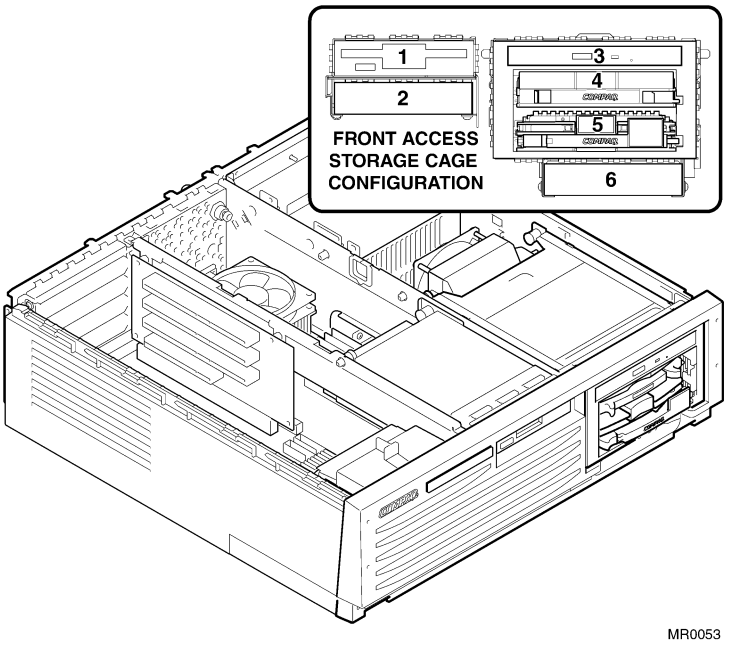
Internal Storage Cage - System Disk Drive - Mandatory

- DS10 Systems configured with the Internal Storage Cage include a 600-MB 40X CD-ROM and 1.44-MB diskette in dedicated drive slots
- DS10 Systems configured with the Internal Storage Cage include three internal storage bays (two in the Storage cage plus one in the system box) that can be configured as follows:
  - Maximum of three internal disk drives (3.5" x 1" drives) or
  two internal disk drives (3.5" x 1") and one 5.25" half height removable media device
- Mandatory selection of SCSI adapter and SCSI cable kit is required for internal SCSI disks or tapes
- IDE Disk drive cable kits are included with the system

Internal IDE Disk Drives	20 GB 7,200 IDE drive	3X-RE58A-AA
	40-GB 7,200 rpm IDE drive (Tru64 UNIX and Linux-Ready only)	3X-RE58A-BA
	Note: Requires console firmware update – update available at http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/ds10/v5.9-6/	
Internal SCSI Disk Drives	9.1-GB 7,200 rpm Ultra2 SCSI drive	DS-RZ2DA-WA
	9.1-GB 10,000 rpm Ultra3 SCSI drive	DS-RZ3DD-WA
	18.2-GB 7,200 rpm Ultra2 SCSI drive	DS-RZ2EA-WA
	18.2-GB 10,000 rpm Ultra3 SCSI drive	DS-RZ3EF-WA
	36.4-GB 10,000 rpm Ultra3 SCSI drive	DS-RZ3FD-WA
Internal Tape Drives	12/24-GB DAT 4mm internal SCSI tape drive (requires SN-PBXKP-BA wide-to-narrow SCSI adapter) (Tru64 UNIX and OpenVMS only)	TLZ10-LB
	20/40-GB DAT tape drive, top gun blue (Tru64 UNIX and OpenVMS only)	3X-SD20X-LB
	35/70-GB AIT tape drive, top gun blue (Tru64 UNIX and OpenVMS only)	3X-SZ35X-LB
	35/70-GB AIT tape drive (LVD), carbon black	3R-A2392-AA
	50/100-GB AIT tape drive, top gun blue (Tru64 UNIX and OpenVMS only)	3X-SZ50X-LB
	Wide-to-narrow SCSI adapter	SN-PBXKP-BA

Step 2 – Select Mandatory Options (Storage Cage, System Disk, SCSI Controller, Power Cord) *(continued)*

Step 2b – Mandatory Selection of System Disk *(continued)*



1. Floppy Disk Drive
2. Internal Drive Bay
3. CD ROM
4. Compaq Universal Drive Bay
5. Compaq Universal Drive Bay
6. Internal Drive Bay

Front Access Storage Cage System Disk Drive Selection - Mandatory

- Selection of one Compaq Universal system disk drive is mandatory for each Front Access Storage Cage
  - Mandatory selection of one Compaq Universal SCSI system disk drive
  - Mandatory selection of SCSI adapter is required for Front Access Storage Cage
  - SCSI cable with connections to the four disk drives is included with the Front Access Storage Cage

DS10 Storage Configuration Rules with Selection of Front Access Storage Cage:

- DS10 Systems configured with Front Access Storage Cage include a 600-MB 24X CD-ROM and 1.44MB drive in dedicated drive slots
- DS10 Systems configured with the Front Access Storage Cage include four storage bays (two Compaq Universal SCSI disk drives and two internal SCSI drives) which can be configured as follows:
  - Maximum of two internal disk drives (3.5" x 1" drives) and two Compaq Universal disk drives (3.5" x 1")
- Mandatory selection of SCSI adapter for Hot Swap Cage Systems
- SCSI cable is included with Hot Swap Cage
- Note: IDE drives may not be used on Front Access Cage systems

Internal SCSI Disk Drives (For Drives Internal to System)	9.1-GB 7,200 rpm Ultra2 SCSI drive	DS-RZ2DA-WA
	9.1-GB 10,000 rpm Ultra3 SCSI drive	DS-RZ3DD-WA
	18.2-GB 7,200 rpm Ultra2 SCSI drive	DS-RZ2EA-WA
	18.2-GB 10,000 rpm Ultra3 SCSI drive	DS-RZ3EF-WA
	36.4-GB 10,000 rpm Ultra3 SCSI drive	DS-RZ3FD-WA
Compaq Universal Disk Drives (For Front Access Storage Cage)	9.1-GB Ultra3 SCSI 10,000 rpm 1.0 Universal disk drive	3R-A0584-AA
	9.1-GB Ultra3 SCSI 15,000 rpm 1.0 Universal drive	3R-A1542-AA
	18.2-GB Ultra3 SCSI 15,000 rpm 1.0 Universal drive	3R-A1543-AA
	36.4-GB Ultra3 SCSI 10,000 rpm 1.0 Universal drive	3R-A0919-AA

Step 2 – Select Mandatory Options (Storage Cage, System Disk, SCSI Controller, Power Cord) *(continued)*

Step 2c – Internal SCSI Adapters and Cable Kits

- Front Access Storage Cage:
  - Mandatory selection of SCSI adapter is required for Hot Swap Storage Cage
  - Front Access Storage Cage includes SCSI cable kit for connection to four disks
- Internal Storage Cage:
  - Mandatory selection of SCSI adapter and SCSI cable kit are required for Standard Storage Cage systems with SCSI disk or tapes

SCSI Adapters (For Internal and Front Access Drives)	PCI 1-channel Ultra-2 SCSI adapter (LVD)	3X-KZPCA-AA
	PCI 2-channel multi-mode Ultra3 LVD SCSI adapter, VHDCI (Tru64 UNIX V5.1 only) Note: Patch kit required, kit available at http://ftp1.support.compaq.com/public/Digital_UNIX/v5.1/	3X-KZPEA-DB
	PCI combo card – PCI 2-channel UltraSCSI single-ended adapter and 10/100 Mbit	KZPCM-DA
	PCI combo card – 1-channel Ultra2 SCSI (LVD) Graphics, 10/100 Ethernet (Tru64 UNIX and OpenVMS only)	3X-DEPVZ-AA
	PCI 1-channel UltraSCSI RAID controller (Tru64 UNIX and OpenVMS only) Note: Internal or Front Access Disk Drives connected to a KZPAC controller are not capable of implementing the fault management features of this controller, such as 'hot spare' and 'automatic rebuilds'– manual rebuilds are supported.	KZPAC-AA
	PCI 3-port UltraSCSI RAID controller (4-MB/8-MB cache) (Tru64 UNIX V4.0F,OpenVMS V7.2-1 Note: Internal or Front Access Disk Drives connected to a KZPAC controller are not capable of implementing the fault management features of this controller, such as 'hot spare' and 'automatic rebuilds' – manual rebuilds are supported."	KZPAC-CA/CB
	PCI 1-channel Ultra2 SCSI RAID controller, 4-MB cache (Linux-Ready Systems only)	SN-KZPBC-AA
	PCI 3-channel Ultra2 SCSI RAID controller, 32-MB cache (Linux-Ready Systems only)	FR-PCTAR-IB
	PCI 3-channel Ultra2 SCSI RAID controller, 64-MB cache (Linux-Ready Systems only)	FR-PCTAR-IC
	DS10 SCSI cable kit (with connections for three internal drives) Notes: The DS10 SCSI cable kit is included with the Front Access Storage Cage. The DS10 SCSI cable kit is required for Internal Storage Cage systems with SCSI disks or tapes.	3X-BN51A-SE

Step 2d – Mandatory Selection of Power Cord

Desktop Power Cords	North America, 2.5 m	3X-BN46K-2E
	Australia, New Zealand, 2.5 m	BN19H-2E
	Central Europe, 2.5 m	BN19C-2E
	China, Australian AS 3112-1981	BN35S-02
	China, NA NEMA 5-15 plug	BN35A-01
	Denmark, 2.5 m	BN19K-2E
	Egypt, India, South Africa, 2.5 m	BN19S-2E
	Israel, 2.5 m	BN18L-2E
	Italy, 2.5 m	BN19M-2E
	Japan, 2.5 m, Dentori approved	3X-BN46G-02
	Switzerland, 2.5 m	BN19E-2E
	UK, Ireland, 2.5 m	BN19A-2E
Rackmount (M-series Cabinet) **Power Cords**	US/Canada	BN20Z-4E
	Non-US	3X-BN46L-4E
	Japan, 2.5m	3X-BN46D-4E

Step 3 – Memory – Optional

- Maximum 2-GB memory
- Systems include one memory kit; maximum two memory kits per system – each kit includes two industry-standard DIMMs with ECC support

256-MB memory kit, two 200-pin, 100-MHz, 128-MB DIMMs	3X-MS310-CA
512-MB memory kit, two 200-pin, 100-MHz, 256-MB DIMMs	3X-MS310-DA
1-GB memory kit, two 200-pin, 100-MHz, 512-MB DIMMs	3X-MS310-EA

Step 4 – M-series Cabinets– Optional

- M-series cabinet enclosures support up to 12 DS10 systems (H9A15).
- M-series enclosures require selection of the following items:
  - H9A11, H9A10, or H9A15 Cabinet, 120V or 240V
  - Cabinet front door based on cabinet height (optional on H9A11 cabinet)
  - Factory integration

Cabinet Configuration Chart for AlphaServer DS10 Rackmount Systems

- A minimum of two AlphaServer DS10 systems is required in the H9A15 M-series cabinet.
- Each system requires a DS10 M-series Rackmount kit (3X-PBX01-AB).
- Each system requires a rack mount power cord.
- Up to six BA356 shelves supported; shelves cannot be mounted behind DS10 systems.

Notes: The number of ballast kits required is determined only by the number of system boxes. Ballast kits are required according to the following chart:
For more information on M-series Cabinet Enclosures, see www.compaq.com/alphaserver/products/m-series/index.html

Cabinet Configuration Chart for AlphaServer DS10 (3U)Rackmount Systems with RA3000 and Disk Shelves (12U)

M-series Cabinet	System Rack Kit per DS10 system	M-series Cabinet Height/Space	DS10 Systems	StorageWorks BA356/DS-SL13R Disk Shelves	Ballast Kits Required
H9A11-MC/MD	3X-PBX01-AB	35″ / 20U	1 or 2	6	1
			3	4	0
			4 or 5	2	0
			6	0	0
H9A10-MC/MD	3X-PBX01-AB	56″ / 32U	1 or 2	6	2
			3 or 4	6	1
			5	6	1
			6	4	0
			7	2	0
			8, 9, or 10	0	0
H9A15-MC/MD	3X-PBX01-AB	66.5″ / 39U	2 or 3	6	2
			4	6	1
			5	6	1
			6	4	1
			7	2	0
			8 to 12	0	0

Step 4 – M-series Cabinets– Optional *(continued)*

Cabinet Configuration Chart for AlphaServer DS10 (3U)Rackmount Systems with RA3000 and Disk Shelves (12U)

- 12U of vertical cabinet space is reserved for one RA3000 controller shelf and up to five disk shelves mounted in top of cabinet, front to back; an additional 2U of vertical space is required for RA3000 controller shelf UPS.
- Disk shelves can be a combination of RA3000 DS-SWXRA-GN disk shelves and StorageWorks BA36R-RC/RD disk shelves.
- RA3000 controller shelf supports a maximum of four DS-SWXRA-GN disk shelves; third and fourth DS-SWXRA-GN disk shelf ordered will be installed in rear of M-series cabinet; rear mounted shelves require that a 2-m SCSI cable (BN37A-02) be ordered separately.
- Systems are supported in remaining vertical space. The following table considers space requirements for the DS10 system boxes and RA3000.
- For ballast requirements refer back to "Cabinet Configuration Chart for AlphaServer DS10 (3U) with StorageWorks Shelves (4U)"

M-series Cabinet	System Rack Kit per DS10 system	M-series Cabinet Height/Space	DS10 System	StorageWorks RA3000 + Shelves
H9A11-MC/MD	BA36R-RC/RD	35″ / 20U	1	1 + 5
			2	1 + 5
			3	1 + 5
H9A10-MC/MD	BA36R-RC/RD	54.2″ / 32U	1	1 + 5
			2	1 + 5
			3	1 + 5
H9A15-MC/MD	BA36R-RC/RD	66.5″ / 39U	2	1 + 5
			2	1 + 5
			3	1 + 5
			4	1 + 5

Cabinet Configuration Chart for AlphaServer DS10 (3U) with StorageWorks BA370 (20U) and Disk Shelves

- 20U of vertical cabinet space is reserved for one front-mounted BA370 rackmount enclosure, or one front-mounted and one rear-mounted BA370 enclosure in top of cabinet, front to back. Note that top fan (1U) is removed from cabinet when BA370 rackmount enclosure is installed.
- Systems and StorageWorks shelves are supported in remaining vertical space; StorageWorks shelves are not supported in rear of cabinet behind a front-mounted BA370 rackmount enclosure.

Cabinet Configuration Rules for AlphaServer DS10 with BA370 and Disk Shelves

Cabinet	Cabinet Rack Kit for BA370	Cabinet Height/Space	Systems	BA370 Enclosures	Shelves
H9A10-MC/MD	BA36R-RC/RD	54.2″ / 32U	1	1 (front) or	2
			2	2 (front & back)	0
H9A15-MC/MD	BA36R-RC/RD	66.5″ / 40U	1	1 (front) or	6
			2	2 (front & back)	4
			3		0

Note: Installation of one BA370 and one system in H9A15 cabinet requires mandatory selection of a ballast kit; a ballast kit is not required if two BA370s and one system are installed in H9A15 cabinet.

M-series Rackmount Kit for DS10

- Rackmount kit must be ordered separately

• DS10 M-series rackmount kit	3X-PBX01-AB

Options

Step 4 – M-series Cabinets– Optional *(continued)*

M-series Rackmount Kit for DS10	• 43″ cabinet enclosure with 35″ or 20U of usable vertical space; 120V 24A controller with 10 NEMA 5-15R outlets, input power plug NEMA L5-30P, Americas, Asia Pacific; includes rear door, H7600-AA power distribution unit, trim kit, and front filler bezel kit	H9A11-MC
	• 43″ cabinet enclosure with 35″ or 20U of usable vertical space; 240V 16A controller with 12 IEC C13 outlets, input power plug IEC 309, 16A, Europe; includes rear door, H7600-DB power distribution unit, trim kit, and front filler bezel kit	H9A11-MD
	• 67″ cabinet enclosure with 54.2″ or 33U of usable vertical space; 120V dual-24A controller, each with 10 NEMA 5-15R outlets, input power plug NEMA L5-30P, Americas, Asia Pacific; includes rear door, top fan tray, and two H7600-AA power distribution units	H9A10-MC
	• 67″ cabinet enclosure with 54.2″ or 33U of usable vertical space; 240V dual-16 A controller, each with 12 IEC C13 outlets, input power plug IEC 309, 16A, Europe; includes rear door, top fan tray, and two H7600-DB power distribution units	H9A10-MD
	• 79″ cabinet enclosure with 66.5″ or 40U of usable vertical space; 120V dual-24A controller, each with 10 NEMA 5-15R outlets, input power plug NEMA L5-30P, Americas, Asia Pacific; includes rear door, top fan tray, and two H7600-AA power distribution units	H9A15-MC
	• 79″ cabinet enclosure with 66.5″ or 40U of usable vertical space; 240V dual-16A controller, each with 12 IEC C13 outlets, input power plug IEC 309, 16A, Europe; includes rear door, top fan tray, and two H7600-DB power distribution units	H9A15-MD
M-series Cabinet Rackmount Kit for DS10 (Refer to the Cabinet Configuration Charts above for configuration rules)	• Rackmount kit must be ordered separately	
	DS10 M-series rackmount kit	3X-PBX01-AB
StorageWorks Shelves Supported in M-series Cabinets with Front Doors (H9A10/H9A15)	StorageWorks UltraSCSI single bus, single-ended shelf with 180W power supply and RETMA mounting kit	BA36R-RC
	StorageWorks UltraSCSI split bus, single-ended shelf with 180W power supply and RETMA mounting kit	BA36R-RD
	180W power supply for redundant power of a BA36R (includes power cord)	CK-BA35X-HH
StorageWorks Shelves supported in M-series Cabinets with Trim Kit (H9A11)	StorageWorks UltraSCSI single bus, single-ended shelf with 180W power supply and RETMA mounting kit, blue bezel	BA35C-AA
	StorageWorks UltraSCSI split bus, single-ended shelf with 180W power supply and RETMA mounting kit, blue bezel	BA35C-BA
BA370 Rackmounted Enclosure/Rear Cabinet Extender	BA370 front-mount rackmount enclosure includes RETMA rackmount kit; first BA370 enclosure must be front mounted in cabinet, 20U height	2T-BA370-AS
	BA370 rear-mount rackmount enclosure includes RETMA rackmount kit; second BA370 enclosure must be rear mounted in cabinet, 20U height Note: Rear Cabinet Extender, H9C10-TE or H9C15-TE, is mandatory for second BA370	2T-BA370-AR
M-series Cabinet Rear Cabinet Extender – Required selection of one cabinet extender for each H9A10 or H9A15 cabinet	Rear cabinet extender, top gun blue, for H9A10-MC/MD cabinets	H9C10-TE
	Rear cabinet extender, top gun blue, for H9A15-MC/MD cabinets	H9C15-TE
M-series cabinet Front Door – Required selection of door based on cabinet height	Front door, top gun blue, for H9A11-MC/MD cabinet enclosure: selection of front door for H9A11 is optional, cabinet includes front trim kit and filler bezel	H9C11-EB
	Front door, top gun blue, for H9A10-MC/MD cabinet enclosure	H9C10-TF
	Front door, top gun blue, for H9A15-MC/MD cabinet enclosure	H9C15-TF

Options

Step 4 – M-series Cabinets– Optional *(continued)*

M-series Cabinet Factory Integration – Mandatory	Factory Integration of systems and storage devices assembled and configured in cabinet enclosure for H9A10 or H9A15 cabinet enclosures	YS-ASCAA-AA
	Factory Integration of systems and storage devices assembled and configured in cabinet enclosure for H9A11 cabinet enclosures	YS-ASCAA-AB
M-series Cabinet Ballast Kits – As Required	• Ballast is added to a cabinet at particular locations for specific configurations to meet safety regulations for installation, operation, and service; see Cabinet Configuration Charts	
	Two 35-40 lb. steel plates	H9C10-MC
M-series Cabinet Rackmount Power Cords – Required for BA370	US/Canada	BN20Z-4E
	Non-US	BN35S-4E
	Japan, 2.5m	3X-BN46D-4E

Compaq *Custom*Systems Support

- Cabinets that contain systems and storage must be assembled by qualified assemblers: Compaq Manufacturing, Compaq CustomSystems, or an authorized Compaq Certified Integration Partner.
- For custom integration of systems, options, cabinet expansion offerings, and additional Compaq and third-party devices, or for other cabinets, doors, and trim kits of a different color, contact Compaq CustomSystems at 1-800-AT COMPAQ, or your local authorized Compaq Certified Integration Partner.

Step 5 – External Storage – Optional

UltraSCSI Configuration Rules

- UltraSCSI configurations require UltraSCSI components (controllers, adapters, shelves, disks, and cables)
- UltraSCSI adapters support UltraSCSI disks at UltraSCSI speeds in UltraSCSI top gun blue shelves (DS-BA356-xx)

Note: DS-BA356-xx is not supported with the KZPCC-xx.

UltraSCSI StorageWorks Pedestals

- UltraSCSI top gun blue pedestals provide support for UltraSCSI disk drives; pedestal is available in single-bus or split-bus configurations and includes a personality module and 180W power supply
- UltraSCSI shelf supports: seven 3.5″ hard disk drives, or one 5.25″ device and four 3.5″ hard disk drives, or two 5.25″ devices and one 3.5″ hard disk drive
- Installation of redundant power supply reduces number of 3.5″ drive slots by one

UltraSCSI single-ended pedestal, single-bus personality module, 180W power supply	DS-BA356-KF
UltraSCSI single-ended pedestal, split-bus personality module, 180W power supply	DS-BA356-KG
UltraSCSI pedestal, single-channel differential personality module, 180W power supply	DS-BA356-KH
180W power supply, includes 120V North American and 240V IEC power cord	CK-BA35X-HH

Tabletop Tape Drives

- Tape drives require an LVD adapter (3X-KZPCA-AA) or single-ended UltraSCSI adapter (KZPBA-CA or KZPCM-DA) and country-specific power cord

12/24-GB 4-mm DAT narrow single-ended tabletop SCSI tape, includes 120V North American power cord, requires BN31W-xx SCSI cable	DS-TLZ10-DB
20/40-GB 4 mm DAT LVD tabletop SCSI tape drive – North America (Tru64 UNIX and OpenVMS only)	157770-001
20/40-GB 4 mm DAT LVD tabletop SCSI tape drive –International (Tru64 UNIX and OpenVMS only)	157770-B31
20/40-GB 4 mm DAT LVD tabletop SCSI tape drive –Japan (Tru64 UNIX and OpenVMS only)	157770-291
35/70-GB AIT LVD tabletop tape drive unit, US	216885-001
35/70-GB AIT LVD tabletop tape drive unit, International	216885-B31
35/70-GB AIT LVD tabletop tape drive unit, Japan	216885-291
50/100-GB 8mm AIT LVD tabletop SCSI tape drive – North America (Tru64 UNIX and OpenVMS only)	157767-001

Options

Step 5 – External Storage – Optional *(continued)*

Tabletop Tape Drives *(continued)*	50/100-GB 8mm AIT LVD tabletop SCSI tape drive –International (Tru64 UNIX and OpenVMS only)	157767-B31
	50/100-GB 8mm AIT LVD tabletop SCSI tape drive –Japan (Tru64 UNIX and OpenVMS only)	157767-291
	32/64-GB DAT loader in carrier (Tru64 UNIX and OpenVMS only)	TLZ9L-VA
	32/64-GB tabletop DAT loader (Tru64 UNIX and OpenVMS only)	TLZ9L-DB
	20/40-GB SCSI (DLT 4000E) tabletop tape drive (Tru64 UNIX and OpenVMS only)	TZ88N-TA
	35/70-GB SCSI (DLT7000) tabletop tape drive (Tru64 and OpenVMS only)	DS-TZ89N-TA
	40/80-GB SCSI LVD (DLT8000) tabletop tape drive – Worldwide	146197-B21
	40/80-GB SCSI LVD (DLT8000) tabletop tape drive –Japan	146197-291
	110/220-GB SDLT Ultra2 LVD tabletop tape drive, US	192103-001
	110/220-GB SDLT Ultra2 LVD tabletop tape drive, International	192103-B31
	110/220-GB SDLT Ultra2 LVD tabletop tape drive, Japan	192103-291

Storage Controllers/Host Bus Adapters for StorageWorks Pedestals and Shelves

- Storage controllers require a minimum operating system revision of Tru64 UNIX V4.0F or OpenVMS V7.1-2 unless noted otherwise.
- Each storage controller/adapter uses one PCI slot

	Maximum # Supported			
	Tru64 UNIX	**OpenVMS**	**Linux**	
PCI-to-Fibre Channel host bus adapter	2	2	-	DS-KGPSA-CA
Fibre Channel cable xx=02, 05, 15, 30, 50 meters				BNGBX-xx
PCI-to-Fibre Channel 64-bit adapter, HBA	-	-	2	DS-SWLA4-PD
PCI 2-port UltraSCSI single-ended adapter and 10/100 Mb Ethernet combo adapter	2	2	-	KZPCM-DA
VHDCI male-to-VHDCI male UltraSCSI cable, Xx=02, 2E(2.5), 03, 05, 10, 20 m)				BN37A-XX
PCI 1-port Ultra2 SCSI (LVD) single-ended adapter, 68-pin HD connector, requires BN38C cable (2 to 20m) to connect to single-ended UltraSCSI shelf	2	2	-	3X-KZPCA-AA
68-pin HD male-to-VHDCI male UltraSCSI cable; required for each external UltraSCSI shelf attached to KZPCA-AA adapter				BN38C-xx
PCI 2-channel LVD multi-mode Ultra3 SCSI adapter, VHDCI Note: Patch kit required, kit is available at http://ftp1.support.compaq.com/public/Digital_UNIX/v5.1/	1 V5.1	-	-	3X-KZPEA-DB
PCI 1-port UltraSCSI differential adapter; includes external 68-pin HD connector; requires BN38C-xx cable (2-25m) to connect adapter to Differential UltraSCSI shelf or RAID controller Note: Internal Connection is not supported	2	2	2	KZPBA-CB
68-pin HD male-to-VHDCI male UltraSCSI cable; required for each external UltraSCSI shelf attached to KZPBA-CA/CB adapter				BN38C-xx
PCI 3-channel Ultra2 LVD RAID controller, 64-bit, 64-MB cache	1 V4.0F only	-	-	DS-KZPCC-CE
PCI 1-channel Ultra2 LVD backplane RAID controller, 64-bit, 16-MB cache	1 V4.0F only	-	-	DS-KZPCC-AC

Options

Step 5 – External Storage – Optional *(continued)*

Storage Controllers/Host Bus Adapters for StorageWorks Pedestals and Shelves *(continued)*	**Maximum # Supported**			
	Tru64 UNIX	**OpenVMS**	**Linux**	
PCI 1-port UltraSCSI RAID controller with 4-MB cache memory, includes RAID Array 230/Plus Subsystem software and documentation kit and VHDCI female connector; tape drives not supported – 18.2-GB or higher disk drives not supported on KZPAC-xx RAID controllers	2	2	-	KZPAC-AA
PCI 3-port UltraSCSI RAID controller with 4-MB cache memory, includes RAID Array 230/Plus Subsystem Software and documentation kit; tape drives not supported; SCSI cable required for each active port; requires BN31K-0E for external third-port connection –18.2-GB or higher disk drives not supported on KZPAC-xx RAID controllers	2	2	-	KZPAC-CA
PCI 3-port UltraSCSI RAID controller with 8-MB cache memory, includes RAID Array 230/Plus Subsystem Software and documentation kit; tape drives not supported; SCSI cable required for each active port; requires BN31K-0E for external third-port connection –18.2-GB or higher disk drives not supported on KZPAC-xx RAID controllers	2	2	-	KZPAC-CB
Cache battery backup for KZPAC controller				KZPSC-UB
VHDCI male-to-VHDCI male UltraSCSI cable, xx=02, 2E(2.5), 03, 05, 10, 20 m) Note: Manufacturing may substitute BN37A-02 cable for specific cabinet configurations				BN37A-xx
SCSI cable/bulkhead assembly kit with KZPAC-CA/CB, allows external connection of one third port				BN31K-0E
PCI 1-channel Ultra2 SCSI RAID controller, 4-MB cache (Linux-Ready systems only)	-	-	1	KZPAC-SB
PCI 3-channel Ultra2 SCSI RAID controller, 32-MB cache (Linux-Ready systems only)	-	-	1	SN-KZPBC-AA
PCI 3-channel Ultra2 SCSI RAID controller, 64-MB cache (Linux-Ready systems only)	-	-	1	FR-PCTAR-IB

StorageWorks Fibre Channel Switches	Fibre Channel SAN Switch, 8 ports with Fabric Operating Software (DS-DSGGB-AA)	158222-B21
	Fibre Channel SAN Switch, 16 ports with Fabric Operating Software (DS-DSGGB-AB)	158223-B21
	Note: For above switches, refer to http://www.compaq.com/products/quickspecs/10457_na/10457_na.HTML for more information	
	Fibre Channel SAN Switch 8-EL (DS-DSGGC-AA) – refer to http://www.compaq.com/products/quickspecs/10647_na/10647_na.HTML for more information	176219-B21
	Fibre Channel SAN Switch 16-EL (DS-DSGGC-AB) – refer to http://www.compaq.com/products/quickspecs/10735_na/10735_na.HTML for more information	212776-B21
StorageWorks BA370 Rackmount Enclosure	• M-series cabinets (H9A10 and H9A15) allow one BA370 enclosure to be installed in front cabinet	
	• Host adapter, RAID Array controller, platform specific Solutions Software Kit, and disk drives must be ordered separately	
	BA370 front mount rackmount enclosure with five 180W power supplies, includes RETMA rackmount kit; first BA370 enclosure must be front mounted in cabinet, 20U height	2T-BA370-AS
	Factory configured RAID of rackmounted BA370/HSZ80	YS-ASCRD-AA
	Note: Factory configured RAID sets for disks in rackmounted BA370 StorageWorks shelf controlled by one or two HSZ70s require completion of questionnaire located at http://www.digital.com/alphaserver/fcr	

Options

Step 5 – External Storage – Optional *(continued)*

Removable Media Devices for External StorageWorks Shelves	12/24-GB 4 mm DAT narrow SCSI tape drive in StorageWorks carrier	DS-TLZ10-VA
	35/70-GB AIT tape drive in StorageWorks carrier (Tru64 UNIX and OpenVMS only)	DS-AIT35-VW
	600-MB 32X CD-ROM drive in StorageWorks carrier	DS-RRD47-VA
	40/80 GB DLT tape drive in StorageWorks carrier	DS-TZ90N-VW
	35/70 GB DLT tape drive in StorageWorks carrier (Tru64 UNIX and OpenVMS only)	DS-TZ89N-VW
	20/40 GB DLT tape drive in StorageWorks carrier (Tru64 UNIX and OpenVMS only)	TZ88N-VA
StorageWorks UltraSCSI Shelves – Requires selection of UltraSCSI adapter and SCSI cable	• StorageWorks Shelf supports seven 3.5" x 1.6" hard disk drives; with the addition of redundant power supply, six drives are supported	
	StorageWorks shelf kits are mounted back-to-back in pedestals and cabinets	
	StorageWorks UltraSCSI single-bus shelf kit	BA36R-RC
	StorageWorks UltraSCSI split-bus shelf kit	BA36R-RD
	3-m SCSI cable	BN37A-03
Disk Drives (Supported in StorageWorks UltraSCSI Shelves)	• Maximum six (10,000 rpm) or seven (7,200 rpm) drives supported in StorageWorks shelf	
	• One power supply supports a maximum of six 10,000 rpm disks	
	9.1-GB UltraSCSI drive 7,200 rpm	DS-RZ1DA-VW
	18.2-GB UltraSCSI drive 7,200 rpm	DS-RZ1EA-VW
	9.1-GB UltraSCSI drive 10,000 rpm	DS-RZ1DD-VW
	18.2-GB UltraSCSI drive 10,000 rpm	DS-RZ1ED-VW
	36.4-GB UltraSCSI drive 10,000 rpm	DS-RZ1FC-VW
StorageWorks Universal Drive Shelves – Model 4314R (Ultra3)	StorageWorks Model 4314R Ultra3 rackmount, single bus, US	DS-SL13R-AA
	Same as above, International	DS-SL13R-AB
	Same as above, Japan	DS-SL13R-AJ
StorageWorks Universal Drive Shelves – Model 4354R (Ultra3)	StorageWorks Model 4314T, Ultra3, Universal Drive Shelves Single Bus, Tower, US	DS-SL13T-AA
	StorageWorks Model 4314T, Ultra3, Universal Drive Shelves Single Bus, Tower, International	DS-SL13T-AB
	StorageWorks Model 4314T, Ultra3, Universal Drive Shelves Single Bus, Tower, Japan	DS-SL13T-AJ
StorageWorks Universal Drive Shelves – Model 4200 to Model 4300 Upgrade I/O Modules	StorageWorks Model 4300 Ultra 160 single-port LVD I/O Module	DS-SE3ZJ-DA
	StorageWorks Model 4300 Ultra 160 dual-port LVD I/O Module	DS-SE3ZJ-SA
System Disk Drives (Supported in Model 4254 Universal Drive Shelf)	9.1-GB Ultra2 (LVD) 7,200 rpm 1.0″ Universal drive	3R-A0525-AA
	9.1-GB Ultra3 (LVD) 10,000 rpm 1.0″ Universal drive	3R-A0584-AA
	9.1-GB Ultra3 (LVD) 15,000 rpm 1.0″ Universal drive	3R-A1542-AA
	18.2-GB Ultra2 (LVD) 7,200 rpm 1.0″ Universal drive	3R-A0527-AA
	18.2-GB Ultra3 (LVD) 15,000 rpm 1.0″ Universal drive	3R-A1543-AA
	36.4-GB Ultra3 (LVD) 10,000 rpm 1.0″ Universal drive	3R-A0919-AA

Step 6 – UltraSCSI RAID Array Controllers & UltraSCSI RAID Packaged Solutions – Optional

RAID Array 3000 Rackmount Controller Shelf	• Selection of RA3000 Solutions Software Kit is required	
	• Supported SCSI adapter – KZPBA-CB PCI 1-port UltraSCSI differential adapter	
	RA3000 rackmount controller shelf, blue, with one controller, 110V **Includes:** UltraSCSI BA356 controller shelf, one HSZ22 2-channel controller with 16-MB cache, integrated Environmental Monitoring Unit (EMU), two 180W power supplies, two dual-port host differential UltraSCSI I/O SBBs, dual-channel UltraSCSI single-ended personality modules, one 120V 1000VA rackmount UPS, 5-m host SCSI cable (BN37A-05), BN38E-0B adapter, UPS serial cable, PC connection serial cable (DB-9), two 68-pin HD tri-link adapters (H8861-AA), two North American power cords, and RETMA mounting bracket (disk shelves and disks not included) **Requires:** Solutions Software Kit for platform, host adapter, RA3000 disk shelf, and disks **Options:** Second HSZ22 controller, up to four additional RA3000 disk shelves, cache memory upgrade	DS-SWXRA-GH
	RA3000 rackmount controller shelf, blue, with one controller, 230V **Includes:** UltraSCSI BA356 controller shelf, one HSZ22 2-channel controller with 16-MB cache, integrated Environmental Monitoring Unit (EMU), two 180W power supplies, two dual-port host differential UltraSCSI I/O SBBs, dual-channel UltraSCSI single-ended personality modules, one 230V 1000VA rackmount UPS, 5-m host SCSI cable (BN37A-05), BN38E-0B adapter, UPS serial cable, PC connection serial cable (DB-9), two 68-pin HD tri-link adapters (H8861-AA), RETMA mounting bracket (disk shelves and disks not included) **Requires:** Solutions Software Kit for platform, two country-specific power cords, host adapter, RA3000 disk shelf, and disks **Options:** Second HSZ22 controller, up to four additional RA3000 disk shelves, cache memory upgrade	DS-SWXRA-GK
RAID Array 3000 Rackmount Disk Shelf	• Select one to four disk shelves	
	• Third and fourth DS-SWXRA-GN disk shelf ordered will be installed in rear of M-series cabinet; rear mounted shelves require that a 2-m BN37A-02 SCSI cable be ordered	
	RA3000 rackmount disk shelf, blue, includes UltraSCSI BA356 disk shelf, two 180W power supplies, single-ended UltraSCSI personality card, one half meter SCSI cable (BN37A-0E), two North American power cords, and RETMA mounting bracket (disks not included); order two country-specific power cords for non-North American use	DS-SWXRA-GN
HSZ22 Controller	• Note that second HSZ22 controller ordered is field installed only, not factory installed; requires BN37A-0E SCSI jumper cable be ordered separately	
	Second HSZ22 controller with 16-MB cache and two 16-MB SIMMs for mirror cache, one BN37A-05 5-m UltraSCSI cable, one BN38E-0B cable adapter – field installable only; note that second HSZ22 controller does not require additional Solution Software Kit	DS-HSZ22-AA
	Second HSZ22 controller with 32-MB cache and two 32-MB SIMMs for mirror cache, one BN37A-05 5-m UltraSCSI cable, one BN38E-0B cable adapter – field installed only; note that second HSZ22 controller does not require additional Solution Software Kit	DS-HSZ22-AB
RA3000 Solutions Software Kit	• StorageWorks Command Console (SWCC) software	
	• Platform specific software	
	• Installation scripts and installation documentation	
	RA3000 Solutions Software Kit for Tru64 UNIX	QB-5TWAB-SA
	RA3000 Solutions Software Kit for OpenVMS	QB-5TWAC-SA
HSG80/HSZ80 External Controllers	Fibre Channel controller (DS-HSG80-BJ), includes 2-MB cache expandable to 128 MB; requires 128697-B21 HSG80 ACS V8.4F software kit or 128698-B21 V8.4P software kit for each HSG80 ordered	380672-B21
	Fibre Channel controller (DS-HSG80-BH), includes 64-MB cache expandable to 128 MB; requires 128697-B21 HSG80 ACS V8.4F software kit or 128698-B21 V8.4P software kit for each HSG80 ordered	380671-B21
	UltraSCSI controller (DS-HSZ80-AH), includes 64-MB cache expandable to 128 MB; requires 400569-001 for Tru64 UNIX or 400571-001 for OpenVMS	400564-B21
	UltraSCSI controller (DS-HSZ80-AJ), includes 256-MB cache expandable to 512 MB; requires 400569-001 for Tru64 UNIX or 400571-001 for OpenVMS	400565-B21

Step 6 – UltraSCSI RAID Array Controllers & UltraSCSI RAID Packaged Solutions – Optional *(continued)*

ESA 10000, RAID Array 7000, RAID Array 8000

- Enterprise Storage Array 10000 and RAID Array 7000 (HSZ70) product set are supported on AlphaServer DS10 systems
- Supported SCSI adapter for HSZ80/HSZ70 – KZPBA-CB PCI 1-port UltraSCSI differential adapter
- Supported SCSI adapter for HSG80 – KGPSA-BC PCI 1-port Fiber-Channel adapter

Step 7 – Graphics Adapters – Optional

- RAID Configuration Utility is accessible via console port for Tru64 UNIX and OpenVMS systems; optional graphics capability available
- Select graphics adapter, monitor, and country-specific keyboard if required

	Maximum # Supported			
	Tru64 UNIX	**OpenVMS**	**Linux-Ready**	
ELSA Gloria synergy graphics with 8-MB SGRAM 1600 x 1200, 2D/3D graphics accelerator	3	3	1	SN-PBXGK-BB
PowerStorm 300 3D multi-head graphics accelerator with 15-MB frame buffer memory and 16-MB texture memory	3	3	-	SN-PBXGD-AD
PowerStorm 350 3D multi-head graphics accelerator with 30-MB frame buffer memory and 32-MB texture memory	3	3	-	SN-PBXGD-AE
PCI combo adapter, Permedia P2 graphics, 10/100 Mbit NIC	1	1	1	3X-DEPVD-AA
PCI combo adapter, Permedia P2 graphics, 10/100 NIC, 1-port SCSI	1	1	-	3X-DEPVZ-AA

Ensoniq 1373 audio adapter (CD audio not supported under Tru64 UNIX and OpenVMS)	3X-AVH10-01

Step 8 – Monitors –Optional

- Graphics monitors other than those listed below can be used if compatible with SVGA graphics ordered with system
- Monitors ship with, but are not integrated with the system.

V570 15" (13.8" viewable image size) multiple-scan color monitor, VGA to 800 x 600 @85 Hz, 0.28mm AG, TCO99, Northern Hemisphere with NA power cord	3R-A3082-AA
Same as above with Eurocord	3R-A3083-AA
Same as above, APD, no power cord	3R-A3084-AA
V500 15" (13.8" viewable image size) auto scanning color monitor, VGA to 1024 x 768 @85 Hz, 0.28mm FST, MPRII, Southern Hemisphere with Australia/New Zealand power cord	3R-VRQV5-11
P710 17" (16" viewable image size) auto-scanning color monitor, Diamondtron NF, 0.25mm aperture grille pitch, VGA to 1280 x 1024 @ 75 Hz, TCO 99; Northern Hemisphere with NA power cord	3R-A2936-AA
Same as above, APD, no power cord	3R-A2260-AA
Same as above, PRC with power cord, CCIB	3R-A3335-AA
Same as above, Southern Hemisphere, with Australia/New Zealand power cord	3R-A2263-AA
Same as above, Northern Hemisphere, with Power Factor Correction and Eurocord, 220V only	3R-A2261-AA
TFT 8020 18" (18.1" viewable image size) flat panel monitor, TFT active matrix, in-plane switching technology 160 degrees viewing angles, 1280 x 1024 resolution, brightness 200 nits, detachable base; requires ELSA GLoria Synergy or PowerStorm 3xx video adapter	3R-A0852-AA

Options

Step 8 – Monitors –Optional *(continued)*

	P910 19" (18" viewable image size) auto-scanning color monitor, Diamondtron NF, 0.25mm aperture grille pitch, VGA to 1280 x 1024 @ 85 Hz, TCO 99; Northern Hemisphere with NA power cord	3R-A2935-AA
	Same as above, PRC with power cord, CCIB	3R-A3334-AA
	Same as above, Southern Hemisphere, with Australia/New Zealand power cord	3R-A2267-AA
	Same as above, Northern Hemisphere, with power factor correction and Eurocord, 220V only	3R-A2265-AA
	P1100 21" (19.6" viewable image size) auto-scanning color monitor, Trinitron CRT, 0.28mm aperture grille pitch, VGA to 1600 x 1200 @75Hz, TCO99, Southern Hemisphere, Australia/New Zealand power cord	3R-VRQP1-23
	P1210 22" (20" viewable image size) auto-scanning color monitor, Diamondtron NF, 0.24mm aperture grille pitch, VGA to 1600 x 1200 @ 85 Hz, TCO 99 with power factor correction, Northern Hemisphere with NA power cord	3R-A2934-AA
	Same as above with Eurocord	3R-VRQP2-AA
	Same as above, PRC with power cord, CCIB	3R-A3333-AA
	Same as above, APD, no power cord	3R-A2268-AA
Video Extension Cable	1.8-m video extension cable; order one for each monitor	BN39C-02
Monitor Power Cords	Australia, New Zealand, 2.5 m	BN19H-2E
	Central Europe, 2.5 m	BN19C-2E
	Denmark, 2.5 m	BN19K-2E
	Egypt, India, South Africa, 2.5 m	BN19S-2E
	Israel, 2.5 m	BN18L-2E
	Italy, 2.5 m	BN19M-2E
	Japan, 2.5 m, Dentori approved	3X-BN46F-02
	North America	BN26J-1K
	Switzerland, 2.5 m	BN19E-2E
	UK, Ireland, 2.5 m	BN19A-2E

Step 9 –Networks and Communications – Optional

- Controllers/adapters require a minimum of Tru64 UNIX V4.0F or OpenVMS V7.1-2.
- Systems include dual embedded 10/100 BaseT Ethernet ports (BN25G-xx cable must be ordered separately)
- Additional Ethernet ports can be added using available PCI slots

	Maximum # Supported			
	Tru64 UNIX	**OpenVMS**	**Linux-Ready**	
PCI 1-port 10/100-Mb Ethernet adapter (Twisted Pair	1	-	1	3X-DE600-AA
PCI to dual-port 10/100 UTP Fast Ethernet adapter	1	1	1	3X-DE602-AA
PCI single-port MMF add-on daughter card for 3X-DE602-AA	1	1	-	3X-DE602-FA
PCI 10/100 Mbit 4-port Ethernet adapter, UTP	1	1	1	DE504-BA
Cable for 10BaseT twisted pair connection				BN25G-xx
PCI Gigabit Ethernet adapter, SC connectors, MMF, no boot support	1	1	1	DEGPA-SA
SC-to-SC dual fiber optic cable				BN34B-xx
PCI combo adapter, Permedia P2 graphics, 10/100 Mbit NIC	1	1	1	3X-DEPVD-AA
PCI combo adapter, Permedia P2 graphics, 10/100 NIC, 1-port SCSI	1	1	-	3X-DEPVZ-AA
PCI FDDI adapter, single attachment station (SAS), multi-mode fiber (MMF), SC connector	1	1	-	3X-DEFPA-AC
PCI FDDI adapter, DAS, MMF, SC connector	1	1	-	3X-DEFPA-DC
MIC-SC dual fiber optic cable mm, pp xx = length in meters				BN34D-xx
SC-to-SC dual fiber optic cable mm, pp xx = length in meters				BN34B-xx
PCI FDDI adapter, SAS, TP-PMD, requires BN25H-03 cable	1	1	-	3X-DEFPA-UC
PCI FDDI dual adapter, DAS, TP-PMD, requires BN25H-03 cable	1	1	-	3X-DEFPA-MC
3m (9.8") FDDI cross-over cable mm, pp xx = length in meters				BN25H-03
PCI 2-port synchronous communications adapter, maximum two PBXDP-Ax per system	2 V4.0F	2	-	PBXDP-AA
PCI 4-port synchronous communications adapter, maximum two PBXDP-Ax per system	2 V4.0F	2	-	PBXDP-AB
PCI 4-port asynchronous controller, cable included; maximum three PBXDA-Ax per system	3 V4.0F	3	-	PBXDA-AA
PCI 8-port asynchronous controller, cable included; maximum three PBXDA-Ax per system	3 V4.0F	3	-	PBXDA-AB
PCI 16-port asynchronous controller, cable included; maximum three PBXDA-Ax per system	3 V4.0F	3	-	PBXDA-AC
PCI-to-ATM 155 Mb adapter- Fiber	2 V4.0F	2 V7.2-1	-	3X-DAPBA-FA
PCI-to-ATM 155 Mb adapter- UTP	2 V4.0F	2 V7.2-1	-	3X-DAPBA-UA
PCI-to-ATM 622 Mb adapter - Fiber	1 V4.0F	2 V7.2-1	-	3X-DAPCA-FA

Step 10 – Keyboards, Mouse

Step 10a – Keyboards

- Keyboards are not included with the system and must be ordered separately
- Selection of country-specific keyboard is recommended.

	Tru64 UNIX	OpenVMS
U.S./English keyboard	SN-LKQ47-BA	LK461-A2
Arabic keyboard	SN-LKQ47-BR	-
Belgian keyboard	SN-LKQ47-AB	LK461-AB
BHCSY keyboard	SN-LKQ47-AX	-
Canadian/English keyboard	-	LK461-AQ
Canadian/French keyboard	SN-LKQ47-AC	LK461-AC
Cyrillic keyboard	SN-LKQ47-BT	LK461-BT
Czech keyboard	SN-LKQ47-BV	LK461-BV
Danish keyboard	SN-LKQ47-AD	LK461-AD
Dutch keyboard	SN-LKQ47-AH	LK461-AH
Finnish keyboard	SN-LKQ47-AF	LK461-AF
French keyboard	SN-LKQ47-AP	LK461-AP
German keyboard	SN-LKQ47-AG	LK461-AG
Greek keyboard	SN-LKQ47-BH	LK461-BH
Hebrew keyboard	SN-LKQ47-AT	LK461-AT
Hungarian keyboard	SN-LKQ47-BQ	LK461-BQ
Italian keyboard	SN-LKQ47-AI	LK461-AI
Korean keyboard	SN-LKQ47-BK	-
Latin-American keyboard	SN-LKQ47-AR	-
Norwegian keyboard	SN-LKQ47-AN	LK461-AN
Polish keyboard	SN-LKQ47-BP	LK461-BP
Portuguese keyboard	SN-LKQ47-AV	LK461-AV
Romanian keyboard	-	LK461-BL
S. Chinese keyboard	SN-LKQ47-CV	-
Slovak keyboard	SN-LKQ47-CZ	LK461-CZ
Spanish keyboard	SN-LKQ47-AS	LK461-AS
Swedish keyboard	SN-LKQ47-AM	LK461-AM
Swiss/French keyboard	SN-LKQ47-AK	LK461-AK
Swiss/German keyboard	-	LK461-AL
Taiwanese keyboard	SN-LKQ47-BI	-
Thai keyboard	SN-LKQ47-CB	-
Turkish keyboard	SN-LKQ47-BU	LK461-BU
Turkish/French keyboard	-	LK461-BW
UK keyboard	SN-LKQ47-AE	-
Yugoslavian keyboard	-	LK461-BY

Options

Step 10 – Keyboards, Mouse *(continued)*

Step 10b – Mouse – Recommended

	3-button mouse	SN-PBQWS-WA

Step 11– MEMORY CHANNEL – Optional

OpenVMS Systems	• Requires OpenVMS V7.1-2 or later and OpenVMS Cluster license (QL-MUZAE-AA)	
Configuring Information	• Up to one PCI to System Area Network adapters (CCMAB-AA) are supported in a single system	
	• Two-node clusters can be configured by ordering a CCMAB-AA for each system and one BN29B-04 or BN29B-10 cable; the cable connects directly to the CCMAB-AA in each system	
	• For three or four system nodes, order one CCMAB-AA adapter, one BN29B-04 or BN29B-10 cable and one CCMHB-AA; make connections from the CCMAB-AA in a system to the CCMHB-AA	
	• CCMHB-AA includes four CCMLB-AA line cards and supports up to four nodes; expansion up to eight system nodes can be achieved by adding up to four additional CCMLB-AA line cards	
	• For integration of MEMORY CHANNEL hubs into cabinet configurations, a rackmount kit (2T-MAVRK-AA) and power cord (BN35S-02) are required	
MEMORY CHANNEL Controller	PCI System Area Network Controller, maximum two	CCMAB-AA
	System Area Network Hub with four line cards; includes BN19P-2E power cord for Canada, Japan, and US operations–for other regions, order appropriate power cord from list below	CCMHB-AA
	Expansion line card for CCMHB hub	CCMLB-AA
	1-m cable for CCMAB and CCMHB	BN39B-01
	4-m cable for CCMAB and CCMHB	BN39B-04
	10-m cable for CCMAB and CCMHB	BN39B-10
	Rackmount kit for CCMHB hub	2T-MAVRK-AA
	Power cord for rackmount CCMHB hub	BN35S-02
MEMORY CHANNEL Power Cords	Australia, New Zealand	BN19H-2E
	Central Europe	BN19C-2E
	Denmark	BN19K-2E
	Egypt, India	BN19S-2E
	Ireland, United Kingdom	BN19A-2E
	Israel	BN18L-2E
	Italy	BN19M-2E
	Switzerland	BN19E-2E

Step 12 – Floor Stand

	Floor Stand for AlphaServer/AlphaStation DS10	3X-BA73P-AA

Options

Step 13 – **Software** – Required selection of media and documentation for first system on site.

	• Software processor code = E	
Tru64 UNIX	• AlphaServer DS10Tru64 UNIX systems include Base license, Unlimited User license, Server Extension license, Open Source Internet Solutions	
	• AlphaStation DS10 Tru64 UNIX systems include 2-user Base license and Compaq Open3D traditional license	
When using Tru64 UNIX V5.0A or later	Tru64 UNIX media and online documentation on CD-ROM	QA-6ADAA-H8
	Tru64 UNIX full hard copy documentation	QA-6ADAA-GZ
	StorageWorks Software Package with licenses for Logical Storage Manager and AdvFS Utilities	QB-5RXAE-AA
	TruCluster Server License	QL-6BRAC-AA
	Advanced Server for Tru64 UNIX, 25 client concurrent use license	QL-5U29M-3D
	Advanced Server for Tru64 UNIX, 50 client concurrent use license	QL-5U29M-3E
	Advanced Server for Tru64 UNIX, 100 client concurrent use license	QL-5U29M-3F
	Advanced Server for Tru64 UNIX, 250 client concurrent use license	QL-5U29M-3G
	Advanced Server for Tru64 UNIX, 500 client concurrent use license	QL-5U29M-3H
	Layered products media and documentation for Tru64 UNIX on CD-ROM	QA-054AA-H8
	DECnet/OSI end-system license for Tru64 UNIX	QL-MTJAE-AA
	DECnet/OSI extended function license for Tru64 UNIX	QL-MTKAE-AA
	Open3D for Tru64 UNIX on CD-ROM, includes graphics drivers	QA-0AFAA-H8
When using Tru64 UNIX V4.0G or earlier	Tru64 UNIX media and online documentation on CD-ROM	QA-MT4AA-H8
	Tru64 UNIX full hard copy documentation	QA-MT4AA-GZ
	StorageWorks Software Package with licenses for Logical Storage Manager and AdvFS Utilities	QB-5RXAE-AA
	TruCluster Available Server license	QL-05SAC-AA
	TruCluster Production Server license	QB-3RLAE-AA
	Tru64 UNIX Driver for MEMORY CHANNEL license	QB-4ZCAE-AA
	Advanced Server for Tru64 UNIX, 25 client concurrent use license	QL-5U29M-3D
	Advanced Server for Tru64 UNIX, 50 client concurrent use license	QL-5U29M-3E
	Advanced Server for Tru64 UNIX, 100 client concurrent use license	QL-5U29M-3F
	Advanced Server for Tru64 UNIX, 250 client concurrent use license	QL-5U29M-3G
	Advanced Server for Tru64 UNIX, 500 client concurrent use license	QL-5U29M-3H
	Layered products media and documentation for Tru64 UNIX on CD-ROM	QA-054AA-H8
	DECnet/OSI end-system license for Tru64 UNIX	QL-MTJAE-AA
	DECnet/OSI extended function license for Tru64 UNIX	QL-MTKAE-AA
	Open3D for Tru64 UNIX on CD-ROM, includes graphics drivers	QA-0AFAA-H8

Step 13 – **Software** – Required selection of media and online documentation kit for first system on site *(continued)*

OpenVMS	• AlphaServer DS10 OpenVMS systems include Base license with System Manager license and Compaq Enterprise Integration Server License Package for OpenVMS Revision V3.0A.	
	• AlphaStation DS10 OpenVMS systems include Base license, Concurrent Use 1-user license, NAS 150 Client license, and Compaq Open3D traditional license.	
	• Compaq Enterprise Integration Package includes licenses for TCP/IP Services for OpenVMS, DECwindows Motif for OpenVMS Alpha, DECprint Supervisor for OpenVMS Alpha Plus, DECprint Supervisor for OpenVMS Open, DECnet-Plus for OpenVMS Alpha End System, Archive/Backup System for OpenVMS Management Tools, Archive/Backup Agent for Windows NT, OpenVMS Disk Services for Windows NT, Office Server for OpenVMS, PATHWORKS 32, PATHWORKS V6 for OpenVMS – Advanced Server, and DIGITAL Office Server Client Access License	
	OpenVMS V7.1-2 media and online documentation on CD-ROM	QA-MT1AR-H8
	OpenVMS V7.2-1 media and online documentation on CD-ROM	QA-MT1AT-H8
	OpenVMS media and online documentation on CD-ROM	QA-MT1AA-H8
	OpenVMS hard copy documentation	QA-001AA-GZ
	Layered products media and documentation for OpenVMS on CD-ROM	QA-03XAA-H8
	Open3D for OpenVMS on CD-ROM, includes graphics drivers	QA-0ADAA-H8
	• OpenVMS Concurrent Use licenses provide the right to interactively use the operating system by the specified number of concurrent users on a designated OpenVMS system. OpenVMS Concurrent Use licenses can be moved from one system to another at user discretion and can be shared in a mixed OpenVMS VAX and OpenVMS Alpha cluster.	
	• OpenVMS Traditional Unlimited Use license is system specific and can only be used on one single system at a time. It cannot be shared between systems or in an OpenVMS VAX or OpenVMS Alpha Cluster.	
	Concurrent Use 1-user license	QL-MT3AA-3B
	Concurrent Use 2-user license	QL-MT3AA-3C
	Concurrent Use 4-user license	QL-MT3AA-3D
	Concurrent Use 8-user license	QL-MT3AA-3E
	Concurrent Use 16-user license	QL-MT3AA-3F
	Concurrent Use 32-user license	QL-MT3AA-3G
	Concurrent Use 64-user license	QL-MT3AA-3H
	Concurrent Use 128-user license	QL-MT3AA-3J
	Concurrent Use 256-user license	QL-MT3AA-3K
	Traditional Unlimited User license	QL-MT2AE-AA
	OpenVMS Cluster license for Alpha systems	QL-MUZAC-AA
	OpenVMS Cluster Client license for Alpha systems	QL-3MRAC-AA
	OpenVMS Cluster Client to Full OpenVMS Cluster Migration license	QL-6J7AC-AA

Step 14– Hardware and Software Support Services

- Select one of the optional CarePaq Priority Service Packages described below that best supports the customer's operational requirements for system availability.

CarePaq Priority Services	• CarePaq Priority Services are available for Compaq AlphaServer/AlphaStation systems running Compaq Tru64 UNIX or OpenVMS operating systems. Priority Services are designed for the growing number of customers who need support beyond the basic warranty. Five packages are offered - Priority, Priority 24, Priority Silver, Priority Gold, and Priority Executive with coverage for both Principal servers/stations and SSPs (Subsequent System Packages) – that meet a full range of customer support requirements.

Program Features – Principal Server/Station

Priority	• 9x5 HW/SW support
	• 4-hour response on-site hardware support
	• 2-hour response for Bronze software support
	• License Subscription for Compaq O/S software and embedded L/P (i.e., EIS for OpenVMS, unlimited users, and server extensions for Tru64 UNIX)
	• Condist update distribution for OpenVMS or Tru64 UNIX and their layered products. (Layered products not included on Condist can be ordered separately.)
Priority 24	• 24x7 HW/SW support
	• Named HW engineer
	• 4-hour response on-site hardware support
	• 2-hour response for Bronze software support
	• License Subscription for Compaq O/S software and embedded L/P (i.e., EIS for OpenVMS, unlimited users, and server extensions for Tru64 UNIX)
	• Condist update distribution for OpenVMS or Tru64 UNIX and their layered products. (Layered products not included on Condist can be ordered separately.)
Priority Silver	• 24x7 HW Support with Named Engineer, 4-hour response
	• 24x7 Silver SW Support - Named Account Rep, 1-hour response Monday – Friday, 8AM-5PM local time; 2-hour response remaining hours
	• License Subscription for Compaq O/S software and embedded L/P (i.e., EIS for OpenVMS, unlimited users, and server extensions for Tru64 UNIX)
	• Condist update distribution for OpenVMS or Tru64 UNIX and their layered products. (Layered products not included on Condist can be ordered separately.)
	• Technical newsletter and SW activity review
	• Proactive Patch Notification
	• One (1) System Healthcheck per year
Priority Gold	• 24x7 HW support with Named Engineer, 4-hour response for on-site support
	• 24x7 Gold SW support - Named Account Rep
	• 30-minute callback (critical); 1-hour callback (non-critical)
	• License Subscription for Compaq O/S software and embedded L/P (i.e., EIS for OpenVMS, unlimited users, and server extensions for Tru64 UNIX)
	• Condist update distribution for OpenVMS or Tru64 UNIX and their layered products. (Layered products not included on Condist can be ordered separately.)
	• Technical newsletter, SW activity review and 10 hours Upgrade impact planning
	• Proactive Revision Management
	• Two (2) System Healthchecks per year
	• Mandatory pre-qualification required

Options

Step 14 – Hardware and Software Support Services *(continued)*

Program Features – Principal Server *(continued)*	
Priority Gold Executive	• 24x7 HW support with Named Engineer, two-hour response for on-site support
	• 24x7 Gold SW support - Named Account Rep
	• 30-minute callback (critical); one-hour callback (non-critical)
	• License Subscription for Compaq O/S software and embedded L/P (i.e., EIS for OpenVMS, unlimited users, and server extensions for Tru64 UNIX)
	• Software update distribution on CD-ROM: OpenVMS or Tru64 UNIX and their layered products (Layered products not included on Condist can be ordered separately.)
	• Technical newsletter, SW activity review and 10 hours Upgrade impact planning
	• Proactive Revision Management
	• Two (2) System Healthchecks per year
	• Customer site must be within 25 miles of a Compaq service location
	• Mandatory pre-qualification required

Program Features – Additional Services	
SSPs (Subsequent System Packages)	• For Priority, Priority 24, Priority Silver, Priority Gold, and Priority Gold Executive
	• HW Support at same level as corresponding package for Principal server/station
	• License Subscription: Compaq O/S (where applicable)
	• Telephone support through Principal server/station covered by full support package
Installation	• Pre-installation review
	• Unpacking of equipment
	• Assemble and test
	• Basic product usage info
	• No software installation added
Installation & Startup Compaq O/S	• Pre-installation review
	• Unpacking of equipment
	• Assemble and test
	• Basic product usage info
	• Install operating systems
	• Product configuration
	• Print and network access
	• Orientation

Step 14 – Hardware and Software Support Services *(continued)*

Model/CarePaq Priority Service	Principal Server/Station 1 year	Principal Server/Station 3 years	Subsequent Systems 1 year	Subsequent Systems 3 years
AlphaServer/AlphaStation DS10				
Priority	FP-A01BA-12	FP-A01BA-36	FP-A21BA-12	FP-A21BA-36
Priority 24	FP-A02BA -12	FP-A02BA-36	FP-A22BA-12	FP-A22BA-36
Priority Silver	FP-A04BA-12	FP-A04BA-36	FP-A24BA-12	FP-A24BA-36
Priority Gold	FP-A08BA-12	FP-A08BA-36	FP-A28BA-12	FP-A28BA-36
Priority Gold Exec.	FP-A09BA-12	FP-A09BA-36	FP-A29BA-12	FP-A29BA-36
Installation	FP-AINST-BA	FP-AINST-BA	FP-AINST-BA	FP-AINST-BA
Priority	FP-A01BA-12	FP-A01BA-36	FP-A21BA-12	FP-A21BA-36
Installation & Startup	FP-ASTAR-BA	FP-ASTAR-BA	FP-ASTAR-BA	FP-ASTAR-BA

Notes:

- AlphaServer/AlphaStation DS10 systems include three years hardware warranty with 5x9, on-site Next Business Day response.
- New Compaq hardware options internal to the AlphaServer/AlphaStation enclosure receive the same warranty or service level as purchased with the server or station.
- External storage devices/cabinets carry their own level of warranty and should be quoted separately for uplifted warranty services (CarePaq Priority Service).
- In addition to the CarePaq Priority Services, uplifted warranty Supplemental Services are available for separate hardware and software support. For more information on Hardware and Software Supplemental Services and other Compaq service options available for AlphaServers and AlphaStations, consult your Compaq Sales Account Manager or visit http://www.compaq.com/services/

Technical Specifications

Physical Characteristics	**Dimensions** (HxWxD)	5.1 x 17.6 x 19 in/13 x 45 x 48 cm	
	Weight (maximum)	36 lbs/16.3 kg	
System Unit	***Environmental***		
	Temperature	Operating (Tower, Rackmount)	50° to 104°F/10° to 40°C
		Note: Maximum operating temperature at sea level. Reduce by 1.8°F (1°C) for each 2,000 ft (660 m) above sea level.	
		Non-operating	–40° to 151°F/–40° to 66°C
	Humidity	Operating	10% to 95%
		Non-operating	20% to 80%
	Heat Dissipation	Single unit = 176 Watts = 601 BTU/Hr	
		Rack of 12 systems = 2112 Watts = ~7,212 BTU/Hr	
	Typical System	AlphaServer DS10 466 MHz	
		Power Supply, 300W	
		Main logic board containing Alpha CPU, EV6, 466 MHz	
		Main memory = 1 GB	
		(3) Hard disk drive	
		(1) Floppy disk drive	
		(1) CD-ROM disk drive	
		(1) PCI Graphics Card	
		(1) PCI Graphics Card	
		Running system exerciser during the power measurement.	
		Measured Input Voltage = 116 VAC RMS @ 60Hz	
		Measured Input Current = 2.27 Amps RMS	
		Measured Input Power = 176 Watts	
	Altitude (unpressurized)	Operating	40,000 ft/12,192 m
		Non-operating	10,000 ft / 3,048 m
		Note: Higher altitudes are possible if maximum operating temperature is reduced.	
	Electrical	Nominal Voltage (Vac)	100 to 120Vac / 220 Vac
		Operating Voltage Range (Vac) (temporary condition)	90 to 128 Vac /180 to 265 Vac
		Power Source Phase	Single/Single/Single
		Nominal Frequency (Hz)	60 Hz /50 Hz
		Frequency Range (Hz)	59 to 61 Hz /49-51 Hz
		Maximum Inrush Current	11 amps/22 amps
		Power Supply (single cordset)	12 amps/5 amps
	Regulatory	Agency Approvals	UL: Listed to UL1950 (3rd edition)
			CUL Listed: CAN/CSA-C22.2 No. 950-M95
			TUV: EN 60950/A11: 1997 GS marked
			FCC: Part 15 Class B
			CE: EN55022, EN50082
			VCCI Class II ITE
			BMSI: CISPR22, CNS13438
			C-Tick: CISPR22, AS/NZS 3548
		Reviewed to	AS/NZ 3260:1993 Australian/New Zealand Standard
			EN 60950/A11: 1997 European Norm
			IEC950 (2nd edition, 4th amend)